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Incidence and Control of the Citrus Hesperiid in Puerto Rico

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A HEAVY infestation of the citrus hesperiid, *Achylodes papinianus minor* Comstock (syn. *Eantis thraso* Hubner) occurred at the end of the rainy season during the autumn of 1955. Surveys revealed high populations of these leaf-folders in many sections of Puerto Rico, especially in the northwest and along the north coast. A survey of various citrus trees in the northwestern area from Mayaguez to Arecibo and inland to Las Marias showed that almost 80 percent (256 out of 311) of the trees examined were damaged. The citrus collection of the Federal Experiment Station had a damage incidence of 84 per 100 trees. Random counts obtained from 20 scattered young trees, between five and eight feet in height, yielded a total population of 186 larvae and chrysalides, for an average of 9.3 per tree.

Two types of caterpillars are frequently found feeding on citrus foliage, the larvae of the hesperiid and those of the *Papilio* butterflies. *Papilio* caterpillars live exposed, while the larvae of *Achylodes* always fold over a portion of a leaf to form a silk-lined shelter (Figure 1). The shelters are vacated and new ones constructed as the larvae grow larger. Smaller forms may move into deserted shelters. The larvae, which usually forage at night, can be readily identified (Figures 2B and C). The yellow-green body tapers toward each end and bears a bright yellow stripe on each side and a faint green stripe along the back. A constricted area of narrow segments occurs immediately back of the relatively large head. In the last of its temporary shelters, which may be made of an

Figure 1. Branch of lemon showing early injury by citrus hesperiid (*Achylodes papinianus minor*). Ten shelters made of folded leaf portions are seen. X 3/8.

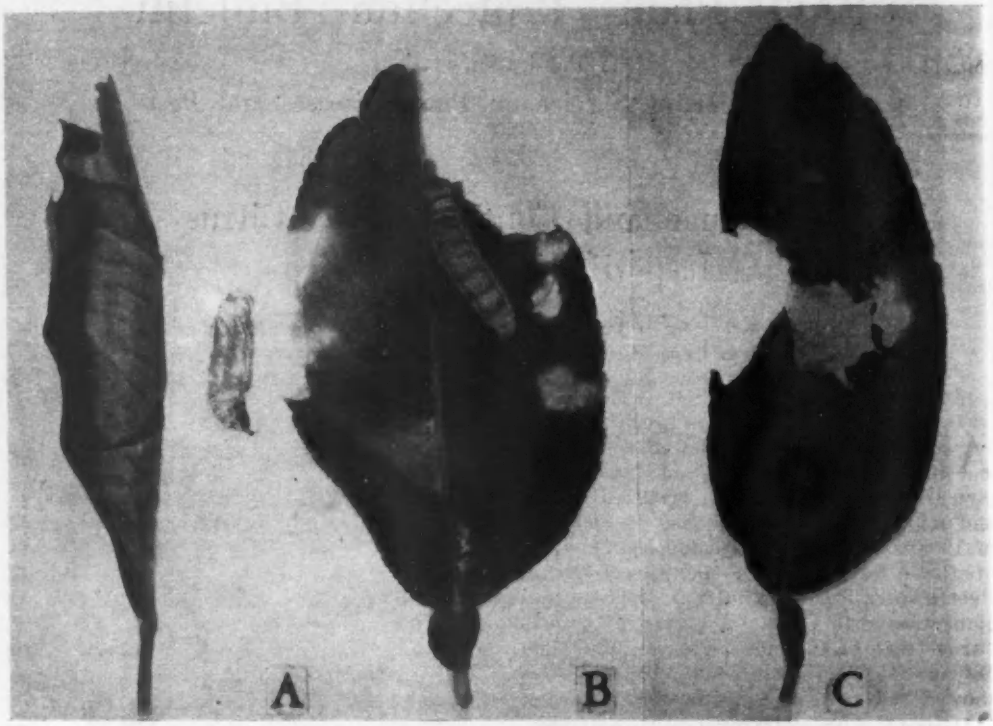

Figure 2. Larvae and chrysalis of citrus hesperiid (*Achylodes papinianus minor*). A. Shelter made of entire leaf. The chrysalis found within shelter is shown on the right. B. Full-sized larva (1 inch long) feeding. C. Young larva and its shelter.

entire leaf, the larva transforms into a dull green, inch-long chrysalis covered with a whitish bloom (Figure 2A). The adult skipper butterfly is dull brown in color and measures about two inches from wing tip to wing tip.

The citrus trees of Puerto Rico, in general, receive very meager care and no insecticides. This neglect allows populations of easily controlled pests like the citrus hesperiid to build up periodically and cause serious damage.

TABLE 1. – *Effect of DDT on the populations of hesperiid larvae attacking Citrus spp.*

Treatment	Numbers of live larvae recorded			
	Before spraying	After spraying		
		24 hours	48 hours	72 hours
DDT, 1 lb. per 50 gal. per acre	120	14	9	2[a]
Control (untreated)	109	106	107	105

[a] These two larvae were dead the following day.

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The abundance of *Achylodes* forms noted would not occur if simple and long-recognized control measures were taken. Over twenty years ago, Wolcott [1] recommended a single spray with arsenate of lead as a control. In the present study, a single spray of wettable DDT at the concentration of one pound active ingredient in 50 gallons of water per acre, applied with a wetting agent, was found to effect control. Three infested trees, between seven and ten years of age, each of orange, lime, grapefruit, and lemon, were treated with one application of this DDT solution at the rate of one quart per tree. A similar number of trees constituted the untreated control. Before spraying, the group to be treated harbored 120 larvae (chrysalides and eggs were not counted in this study), and the control group, 109 feeding forms. Twenty-four hours later, only 14 live larvae were found on the trees sprayed with DDT, but 106 were counted on the controls. No live larvae were to be found on the DDT sprayed trees the fourth day following treatment (Table 1).

Periodically, the citrus hesperiid populations in Puerto Rico increase to proportions that cause serious damage to citrus trees. These foliage-feeding leaf-folders can be controlled effectively with a single spray of DDT applied when they are first in evidence.

[1] WOLCOTT, G.N. 1933. An economic entomology of the West Indies. Entom. Soc. Puerto Rico, San Juan.

Insect Pests in British Colonial Dependencies: A Half-Yearly Report[1]

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Asia

Hong Kong

CONSIDERABLE damage to the first rice crop in 1955 was caused, in many areas, by the rice stem-borer, *Schoenobius incertulas* (Wlk.) (Lep., Pyralidae) (see *FAO Plant Prot. Bull.* 3: 56. 1955). In some areas losses were as high as 30 percent. Organized control was undertaken by the Department of Agriculture in co-operation with the farmers. A reduction in loss to 10 percent was found possible by the application of an endrin spray to nurseries, and two or three times to the growing crop.

Many species of flea-beetle (Col., Halticinae) cause much damage to cruciferous crops. Effective control has been obtained for a number of years by the application of proprietary products containing BHC and DDT, but later these insecticides have lost their effectiveness. A parathion product gave very good results, but owing to its dangerous nature its use is under strict control. An endrin spray, 1 part in 300 parts of water, with the addition of a copper fungicide which appears to have a repellent effect, is now used. Weed hosts must also be kept down.

Malaya

A Cossid borer of cacao branches that has formerly been recorded as *Zeuzera coffeae* Nietn. has now been shown to be *Zeuzera roricyanea* Wlk.

[1] This report covers the period from July to December 1955 and includes information received too late for inclusion in the previous report.

Africa

Nigeria

The grasshopper, *Zonocerus variegatus* (L.), is again reported as causing serious damage to *Citrus* (see *FAO Plant. Prot. Bull.* 3 : 57. 1955) and also to cotton and cassava at Ibadan, and borers, *Phosphorus* spp. (Col., Lamiidae) (see *Rev. Appl. Ent.* A 26 : 469. 1938), caused much damage to kola (*Cola* spp.) crops.

Recent investigations have shown that damage to guinea corn and other cereals by the sorghum midge, *Contarinia sorghicola* (Coq.) (see *FAO Plant Prot. Bull.* 2 : 81. 1954) is more widespread than had been suspected.

An unusual infestation of rice in the Northern Region by a Cantharid beetle, *Cylindrothorax melanocephala* (F.), is recorded, and the Galerucid beetle, *Monolepta goldingi* Bryant (see *FAO Plant Prot. Bull.* 3 : 56. 1955), did considerable damage to early millet at a settlement scheme in Plateau Province.

In the field of control, encouraging results are being obtained in experimental control of the cacao Mirids, *Sahlbergella singularis* Hagl. and *Distantiella theobroma* (Dist.), using gamma BHC as a low volume spray applied with power-operated knapsack sprayers, and as a dust.

A survey has been made of attack by the cereal stem-borers, *Busseola fusca* (Fuller) and *Sesamia calamistis* Hmps., in the Western Region. The percentage of plants attacked, with the number of localities sampled (in brackets) for the different crops were, maize 33 (87), rice 19 (32), guinea corn 17 (18) and sugar cane 13 (11).

British West Indies

Barbados

During the season 1951/52, a root-infesting Coccid, an apparently undescribed species of *Neorhizoecus*, was observed on sugar cane. The ant, *Acropyga* (*Rhizomyrma*) *marshalli* Crawley, is associated with it. It is not known how long the Coccid has been established on sugar cane in Barbados because the observed symptoms are indistinguishable from those caused by several other pests. It is, however, known that the ant which attends it has been present for many years.

The Coccid, which was at first localized, has been spreading and is often abundant, when it causes failure of ratoon cane. Plant cane fields are rarely visibly affected, since the tillage operations in properly prepared fields destroy the majority of the Coccids and ants in the soil. Certain types of soil and soil-moisture conditions seem to favor the pest.

Preliminary trials, in 1954/55, indicate that reasonably good control of the Coccid and its attendant ant can be obtained by the application of a dust of 13 lb. gamma BHC in 750 lb. diluent per acre ploughed and harrowed into the soil when preparing the land, and by broadcasting on to the soil of infested ratoon fields. Increases in yield in such treated ratoon fields have ranged from 6 to 14 tons per acre. To be effective, surface application must be followed by rain to carry the insecticide into the soil.

Grenada

Minor outbreaks of the cacao beetle, *Steirastoma breve* (Sulz.) (Col., Lamiidae), and cacao thrips, *Selenothrips rubrocinctus* (Giard), are reported during the first half of 1955.

Plant Diseases in British Colonial Dependencies: A Half-Yearly Report[1]

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Gold Coast

Mycosphaerella musicola (in the conidial state) was reported on banana in various localities in the Gold Coast and Togoland.

Grenada

Witches' broom of cacao (*Marasmius perniciosus*) was active owing to the weather conditions which favored heavy and continuous blushing of cacao but the outbreak was brought under control.

Malaya

Rice seedlings have been found to be attacked by various fungi, including *Curvularia affinis*.

Fomes lignosus was recorded on *Citrus microcarpa* and *Corticium salmonicolor* on calabash (*Crescentia cujetol*), both new host records for Malaya.

Calonectria rigidiuscula (the perfect state of *Fusarium decemcellulare*) occured on durian (*Durio zibethinus*) and is probably the cause of stem rot.

Mauritius

Cotton rust (*Phakopsora desmium*) was recorded from Agalega Island.

Montserrat

Black arm of cotton (*Xanthomonas malvacearum*) occurred in Montserrat and also banana leaf spot (*Mycosphaerella musicola*) and withertip of limes (? *Gloeosporium limetticola*).

Nigeria

Helminthosporium turcicum is serious and occurs on both rust-resistant and unselected varieties of maize.

Maize rust (*Puccinia polysora*) was successfully controlled by use of tetramethyl-dithiuram at four day intervals.

Against black pod of cacao (*Phytophthora palmivora*), several thousand farmers are now using fungicides. Over 6,000 applied for pumps during the last six months. In addition to carbide Bordeaux mixture, Perenox and Perepod are being used.

Among rice diseases, brown spot (*Cochliobolus miyabeanus*) occurred in many areas and *Phyllosticta oryzina* was recorded on rice glumes.

Sphacelia sorghi was found on *Sorghum* and *Cystopus bliti* on *Celosia argentia*.

Against black arm of cotton (*Xanthomonas malvacearum*), over 200 tons of cotton were treated with a mercurial seed dressing in an attempt to reduce the losses.

North Borneo

A specimen of *Puccinia polysora* was received from North Borneo.

Christmas Island

A specimen of *Puccinia polysora* was also received from Christmas Island, Indian Ocean.

Uganda

Banana wilt (*Fusarium oxysporum* f. *cubense*) has been found from Toro to Bugisu, so that it probably spans the whole of Uganda.

A serious seedling disease of tobacco has appeared at Gulu and is being investigated.

[1] This report covers the period from July to December 1955.

Rodent Control with Toxaphene and Endrin in Forests in Western Germany

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DURING the period of reforestation following World War II, field voles (*Microtus agrestis L.*) caused considerable concern to foresters in Germany because of the serious damage they caused to the bark in extensive plantations and natural regenerated forests. The causes of the population dynamics of this species of small field voles were recently discussed (1,2,3,5,8). Their rapid increase is attributed first of all to the mass felling of trees, thinning of many forests by over-exploitation and a heavy growth of grass in the areas where, on account of the difficult conditions of that period, regeneration could not be carried out immediately after exploitation. The losses that German forests suffered during the winters of 1949/50 and 1952/53 amounted to several million Deutsche marks (3). In the state forests of Lower Saxony alone the losses amounted to at least DM 500,000 [1] during the winters of 1951/52 and 1952/53 (11). According to Frank (6), control of rodent pests presents an unsolved problem. Technical and financial limitations permitted only preventive measures such as weed control in forests by mechanical and chemical means. Valuable plantations may be protected against bark-biting by using protective coatings of repellents which are harmless to plants when applied at stem bases (9,10). However, such treatment is impracticable in large areas of natural regenerations, especially of beech (*Fagus silvatica*). Field voles only occasionally accept poisoned grain (10); coumarin (warfarin) preparations failed entirely and little was achieved with various bait material (7). Frank (4) considers reduction of Microtinae by means of bacteria as of little avail though frequently suggested.

[1] One Deutsche mark (DM) = 0.238 U.S. dollar.

The failure of traditional means and the urgent demand of foresters for effective defence methods against field voles caused research work in Germany to adopt a new approach. Since 1954 thorough field experiments with chlorinated hydrocarbon compounds were carried out against field voles. Toxaphene and endrin proved effective in these experiments, provided a fivefold dose is used for this special purpose, as compared with the dose commonly used for the control of insects. Dusts as well as emulsions were tried in area treatments in which the entire surface growth was poisoned. The effect of these insecticides on field voles was amazing. Since grasses are the main food of this field vole which has the largest feeding capacity of all small rodents, and since they also feed during day-time in contrast to long-tailed mice, they become more quickly poisoned. Dead field voles and ones showing affected movements were found only a few hours after the application of the insecticides. Two or three days later the treated areas were free from field voles. This was checked by intensive search of regenerated forests and by the setting up of traps. Autumn is considered the best period for control. Breeding has ended by then and the entire *Microtus agrestis* population may be controlled before bark-biting begins which, as a rule, increases with the onset of snow. In spring, treatment is only useful in preventing possible current damage from bites, but not for the prevention of future damage, since field voles hardly ever attack ligneous plants in summer, when fresh grass and other vegetation are in abundant supply. Details of those experiments have been published elsewhere (12).

The most effective and rational control method for practical purposes has been found to be spraying grasses and other surface

growth with 4 to 6 kg. of 50 percent toxaphene emulsion or 1.0 to 1.7 kg. of 30 percent endrin emulsion in 400 to 600 liters of water per hectare. The expenditure for the insecticides, labor and the possible expense for water supplies would amount to DM 24 to DM 42. Dusting operations, which require 30 kg. of 30 percent toxaphene per hectare, are more expensive. Dusting should therefore be used only in forests where water supplies are scarce.

As a precaution, the method mentioned above was recommended initially only for fenced areas free of wild game. However, since injury to game, birds or domestic livestock has not been observed so far throughout the many thousands of hectares which have been treated, this method is now also applied to unfenced forest areas. To be on the safe side, dogs should be kept away from treated regeneration areas during the first few days. Since fish are very sensitive to the poisons, contamination of water should be avoided.

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Plant Disease Situation in the United States[1]

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An Eriophyid Mite Vector of Peach Mosaic

NORTON S. Wilson and Laurence S. Jones of the Entomology Research Branch and L.C. Cochran, of the Horticultural Crops Research Branch, Agricultural Research Service of the United States Department of Agriculture, report that an Eriophyid mite of the genus *Eriophyes*, probably an undescribed species, has been found to be a vector of the peach mosaic virus. The mite infests peach and plum naturally and is closely related to several other species of this genus occurring in southern California on rosaceous hosts. It was first collected in April 1955, near Riverside, California, on mosaic-infected peach trees 5 years old, in an isolated test plot maintained in a site where peach mosaic has spread naturally from peach to peach at a rate equalling the maximum recorded in orchards in problem areas. No plum or other stone-fruit trees were growing in the vicinity.

On peach trees the mite has been found to infest only the buds. The densest populations were in retarded buds in April. Detectable numbers were present only so long as some basal scales remained tightly appressed (Figure 1), as was frequently the case on stunted spurs. When the protective bud scales flared the mites were no longer found, and it is assumed that they disseminate at that time. Transportation in air currents is their probable means of natural dissemination. In late summer the mites found on peach trees were only in retarded and stunted buds, which in southern California are common at this season. Such bud retardation is characteristic of the peach mosaic disease, and hence the persistence of the virus vector is favored in diseased trees.

Figure 1. Retarded leaf bud of peach in June with outer scales removed, exposing plant tissue and location of the Eriophyid mites, the vector of peach mosaic virus.

The mite has been found infesting several species of plums, some of which are native to extensive areas of the country. On the plums the mites were present under scales of

[1] This report is based upon material submitted by Collaborators of the Plant Disease Epidemics and Identification Section, Agricultural Research Service, United States Department of Agriculture.

Figure 2. Rio Oso Gem peach seedlings showing peach mosaic symptoms resulting from inoculation by *Eriophyes* sp. This tree received 15 mites from a diseased tree during the newly germinated seedling stage.

dormant and retarded buds, but they were also found reproducing in leaf axils and among rudimentary leaves of expanding buds on vigorously growing shoots. The following plums, growing in a separate plot near Riverside, have been found infested: Chickasaw (*Prunus angustifolia*), hortulan (*P. hortulana*), wild goose or pottawattamie (*P. munsoniana*), Mexican (*P. mexicana*), and myrobalan (*P. cerasifera*).

Successful transmission of the peach mosaic virus by this mite was obtained after more than 8,000 tests with more than 150 species of suspected insects and mites. The results of all experiments were negative except those with this Eriophyid mite.

The initial transmission of the peach mosaic virus was obtained from a series of transfers of the mites from naturally infested, mosaic-diseased field peach and plum trees to 65 healthy, potted Rio Oso Gem peach seedlings in a greenhouse. Of these transfers 56 were from peach and 9 were from hortulan plum.

Seventeen of the 65 test peach trees have shown symptoms of peach mosaic (Figure 2); 16 of the 17 received mites from infected peach and 1 from hortulan plum. Unseparated adult and immature mites were used, 4 and 5 mites to each tree in 3 tests, 2 to 10 mites in 10 tests, 34 and 40 mites in 2 tests, and 50 and 60 mites in 2 tests. To confirm the presence of peach mosaic virus, patch bark grafts were taken from 10 of the 17 reacting trees and placed in other healthy peach seedlings; all the graft-inoculated trees developed typical symptoms of peach mosaic.

In subsequent more extensive work two

additional cases of transmission have been secured, one following the feeding of a single adult mite.

Peach mosaic symptoms appeared on the young peach trees after mite transfers to them in 14 to 20 days in 9 tests, in 20 to 30 days in 3 tests, in 31 to 60 days in 3 tests, and in about 100 days in 2 tests. Check trees that had received equivalent numbers of mites of this species from healthy peach and plum trees developed no symptoms.

The Rio Oso Gem peach seedling test trees were of three types: (*a*) newly germinated seedlings less than 3 inches tall, and frequently under an inch, with only rudimentary leaves, (*b*) new seedlings 3 to 12 inches tall, and (*c*) year-old whips emerging from dormancy. All the prompt reactions appeared in either group (*a*) or (*c*). It seems probable that more of the 65 original trees may show symptoms after a dormant period, judging from results of earlier work to determine the time of natural spread of the disease into young trees.

In pathological studies of peach mosaic it was found that field-plot trees graft-inoculated when just breaking dormancy usually showed symptoms within 3 to 6 weeks, but trees that were in foliage when inoculated had a longer incubation period and often did not show symptoms until after a period of dormancy. In previous entomological work with potted trees in the greenhouse, the time required between graft inoculations and symptom appearance was extremely variable and largely unpredictable. While symptoms appeared in some instances in 14 days, many of the trees showed no symptoms during the same season they were inoculated.

Peach mosaic disease is a continuing problem in peach growing in southern California, Colorado, Texas, and in restricted parts of Oklahoma and Arkansas. After transmission by this *Eriophyes* mite had been determined, a brief collecting trip outside southern California was made, and the species was readily taken in mosaic-infected orchards in western Colorado, Arizona, and New Mexico in all the districts in which a search was made.

Outbreaks and New Records

Bechuanaland Protectorate

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Sooty Stripe on Sorghum

THE occurrence of the sooty stripe fungus, *Ramulispora sorghi* (Ell. & Ev.) Olive & Lefebvre, was recorded for the first time in June 1955 on kaffircorn (*Sorghum caffrorum*) leaves near Mahalapya. Later it appeared that the disease is widespread among indigenous kaffircorn crops throughout the Northern Protectorate. None of the varieties observed resisted the disease. Columbus grass (*Sorghum almum*) was also found infected.

Kenya, Mauritius and Tanganyika

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Phyllocoptruta oleivora: A New Record

Material collected in 1955 from *Citrus* in Kenya, Mauritius and Tanganyika and submitted to the Commonwealth Institute of Entomology has been identified as the citrus rust mite, *Phyllocoptruta oleivora* (Ashm.). All these are believed to be new records.

Aceria sheldoni in Tanganyika: A Correction

In the notice recording the first occurrence of this mite in Kenya (*FAO Plant. Prot. Bull.* 3: 172. 1955) it was stated that it has recently also been recorded from, among other territories, Tanganyika.

Material collected from *Citrus* in Tanganyika, and thought to be this species, has since been received. This has proved to be *Phyllocoptruta oleivora* (Ashm.), itself a new record for Tanganyika. Evidence of the occurrence in Tanganyika of *Aceria sheldoni* (Ewing) is therefore lacking.

Union of South Africa

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Downy Mildew on Sorghum and Maize

A severe outbreak of downy mildew, *Sclerospora sorghi* (Kulk.) Weston & Uppal, was observed in January 1956 on sorghum and maize at Roedtan in the Northern Transvaal. Kaffircorn (*Sorghum caffrorum*) fields were found which were 100 percent infected. The highest incidence of the disease in maize was 92 percent. Affected maize plants developed a malformed tassel, commonly described as "crazy top."

A New Host of Sorghum Mildew and Rust

Columbus grass (*Sorghum almum*) was found infected with *Sclerospora sorghi* in the Northern Transvaal near Roedtan and with *Puccinia purpurea* Cke. in the Eastern Transvaal near Barberton. Both fungi are recorded for the first time on this host in South Africa.

United States

Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture

European Corn Borer Outlook for 1956

A survey to determine the abundance of the European corn borer, *Pyrausta nubilalis* (Hbn.), in the infested areas of the United States was conducted during the autumn of 1955. Results show the average to be slightly below the number found in the autumn of 1954 - 164 larvae per 100 stalks compared with 190 in 1954. Several States, including the important corn-growing States of Illinois, Indiana, Wisconsin and Minnesota, show increases in populations, however. During 1955 the pest was not found in any new States, although it was discovered in 47 counties for the first time. These new areas were mostly in the southern periphery of its distribution.

Plant Quarantine Announcements

Denmark

Supplementary Order of 8 February 1956, issued by the Ministry of Agriculture, amends Order of 27 April 1953 concerning the importation of plants, parts of plants, etc. (see *FAO Plant Prot. Bull.* 1 : 158, 190. 1953). This new Order, which will come into force 1 April 1956, contains the following provisions:

1. Importation of pine plants from North America is prohibited on account of the western pine gall rust (*Cronartium harknessi*).

2. The list of plants regarded as the hosts of San José scale (*Aspidiotus perniciosus*) is shortened and consists of the following only:

Acer	*Populus*
Cotoneaster	*Prunus*
Crataegus	*Ribes*
Cydonia	*Rosa*
Euonymus	*Salix*
Fagus	*Sorbus*
Juglans	*Syringa*
Ligustrum	*Tilia*
Malus communis	*Ulmus*
Pirus	

Importation of those plants is prohibited.

3. For the importation of lettuce seed, field inspection to ensure freedom from lettuce mosaic and a statement to this effect in the phytosanitary certificate are no longer required.

4. Bacterial ring rot of potato (*Corynebacterium sepedonicum*) is added to the list of prohibited diseases and pests, and potato tubers to be imported for planting or consumption must be free from this disease.

5. Fruit trees and shrubs and ornamental woody plants including grafts and cuttings, must originate from nurseries, orchards or fields which have been inspected by the plant protection service of the country of origin and found to be free from virus diseases. In this regard, a guarantee of complete freedom from such as latent viroses, however, is not expected and this new requirement is aimed at the avoidance of the importation of plants infected by virus diseases exceeding the extent that can be detected by conscientious field inspection.

The prohibition of the importation of *Prunus americana* and *P. virginiana* as well as seeds of all stone fruit trees is still in force.

Egypt

1. Order of 3 February 1955, specifying the conditions for importation of plants and agricultural products, contains the following provisions.

The importation of plants and agricultural products is subject to the authorization of the Bureau of Agricultural Quarantine. If the imported materials are not for cultivation or reproduction, a permit of one year or less, expiring 31 December, can be obtained.

Each shipment should be accompanied by an official certificate issued by the country of origin, attesting freedom from any disease and indicating the scientific name of the plant. For plants of onion, peach, prune, fig and banana, the certificate should indicate that they are free from virus diseases. For seeds of beans, soybean, kaoun (*Cucumis angulatis*), vegetable marrow and lettuce, the certificate should indicate freedom from viruses transmissible by seed. For seed potatoes, the certificate should indicate that the shipment as well as the region of cultivation is free from *Synchytrium endobioticum* and *Leptinotarsa decemlineata*.

Certificates are not required for the following materials, if they are not for cultivation or reproduction: seed and seed products, seed cakes (except cotton seed cake), parts of plants unfit for germination, plant fibers, certain herbs (except Gabali tea[1]), tanning material (powdered or processed), wood, dehydrated onions, dates, date paste, dried figs, carob, pine seeds, pepper, red pepper and coffee. Post parcels and travellers' parcels, if not exceeding 30 kg., are also exempt from the certificate requirement.

Wood should be imported without bark. Seed potatoes for importation should be packed in new bags and sealed.

2. Order of 3 February 1955, specifying the conditions for the importation of plants and agricultural products in transit, promulgates that such materials in transit are to be subject to the same regulations as for normal importation, except that phytosanitary certificates and disinfestation will not be required, provided that they are stored separately at the port of entry when the period of storage exceeds 7 days.

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[1] Gabali tea refers to *Pulicaria undulata*.

The transit of cotton or cotton seed of foreign origin from one boat to another, in an Egyptian port, is permitted only if the cotton is ginned and pressed into bales and the cotton seed is contained in properly closed thick new bags. A permit for transit should be obtained in advance. The trans-shipment may take place only at Port Said or Port Tewfick, within 10 days, and transport by land is prohibited. The trans-shipment of cotton or cotton seed by airplanes is permitted only if the goods are packed in completely closed metal boxes.

3. Order of 3 February 1955, specifying the conditions for the importation for scientific purposes of materials prohibited by Law No. 417 of 22 July 1954 (see *FAO Plant Prot. Bull.* 3: 79. 1955), authorizes such imports for the benefit of scientific organizations and institutions under conditions to be laid down for each case by the Ministry of Agriculture. Such imports are subject to the authorization by the Bureau of Agricultural Quarantine and the requests should specify the name and quantity of the plant species to be imported, the type of packing, the country of origin, the purpose of the importation, and precautions to be taken. The shipments will be despatched through the Bureau of Agricultural Quarantine.

4. Order of 3 February 1955, specifying the conditions for the importation of commercial cotton samples, provides the following requirements:

a) the cotton must be ginned and completely free from seed waste;
b) each sample must not exceed 2 kg. in weight;
c) the sample must be well packed in a strong case;
d) the sample must be addressed to the importer care of the Bureau of Agricultural Quarantine.

The samples will be disinfested immediately after arrival, and will be destroyed if not claimed within 7 days.

News and Notes

WHO Meeting on Toxic Hazards of Pesticides to Man

A Study Group on toxic hazards of pesticides to man will be convened by the World Health Organization in Geneva, 6-13 June 1956. Experts in this field from various countries and representatives of other international organizations concerned have been invited to attend the meeting. The provisional program which has been circulated contains the following items concerning plant protection:

1. The use of pesticides in agriculture.
2. Measures to control the hazards to operators using pesticides in public health and agriculture.
3. Hazards in manufacture and international transport of pesticides.
4. Toxic properties of pesticides.
5. Contamination of food and water supplies by pesticides.
6. Control of hazards to users by means of regulations.

After the discussions, the Study Group will present reports and recommendations on measures for protection of operators, toxicity of pesticides, food and water contamination, regulations and codes of practice in controlling hazards, and indirect hazards and other problems raised by the use of pesticides.

Nematologica, a New International Journal

The Third International Symposium on Plant Nematodes and the Diseases They Cause, held in Wageningen, 30 June – 5 July 1955, approved the founding of a new journal for nematological research. An editorial board consisting of four nematologists was appointed, with J.H. Schuurmans Stekhoven as the Editor-in-Chief.

The new journal, under the title of *Nematologica*, is intended to cover the field of nematology in general, except for medical and veterinary subjects, but plant-parasitic nematodes will be its primary concern. With an increasing number of scientists devoted to nematological research, the publication of a periodical exclusively for papers in this field should fill a long-felt gap and provide a useful intermediary between nematologists of different countries for the advancement of this branch of science.

The first issue of *Nematologica* was published in January 1956, and contained eleven papers presented at the symposium. Later issues will appear quarterly. Nematological news covering problems of general interest, a bibliography of recently published papers and personal items, will be included in each issue as a special section.

Enquiries about this journal should be addressed to the Secretary of the editorial board, Dr. P.A. van der Laan, Marterlaan 18, Bennekom, the Netherlands.

Bibliography of Plant Diseases in Yugoslavia

A mimeographed publication entitled *A contribution towards a bibliography on plant diseases in Yugoslavia*, compiled by B.R. Lipscomb with the assistance of Mihailo Krstić, was issued recently by FAO, primarily for use by its own staff members. It contains 210 entries with translated titles and full citations. Wherever the original papers were reviewed in abstracting journals, the abstracts are also cited. A limited number of copies are available for distribution to plant pathologists who are interested in this subject, and are obtainable from the Plant Production Branch, Agriculture Division, FAO, Rome, Italy.

Distribution of Mediterranean Fruit Fly

In the *First Supplement* to the *Digest of Plant Quarantine Regulations*, published by FAO in 1954, the abstracts of the legislation of Barbados and Cambodia, based upon documents received from official sources, indicate that Jamaica and New Zealand are listed as territories where the Mediterranean fruit fly (*Ceratitis capitata*) is known to occur. Information has been received from the New Zealand Department of Agriculture and the British Colonial Office indicating that this fly does not occur in New Zealand or Jamaica.

New Zealand had two outbreaks of the fruit fly in 1907 and 1908 following the importation of infested fruit from Australia. Stringent eradication measures were enforced and since 1908 no

fruit flies of any kind have been found in New Zealand. Strict precautions are laid down in its Plant Quarantine Regulations of 25 June 1952 to prevent the introduction of all species of fruit flies.

In Jamaica, the Mediterranean fruit fly has never been recorded. The Barbados Order of 17 September 1931, which provides a list of infested territories, has been amended by the Order of 23 May 1938, which deletes Jamaica from that list.

For the current distribution of the Mediterranean fruit fly, reference should be made to the Distribution Maps of Insect Pests No. 1, issued 30 June 1951 by the Commonwealth Institute of Entomology. The only area that has become infested since then is Costa Rica in Central America.

Roma - Tip. del Senato del dott. Giovanni Bardi